SECTION 11409 - SLIDING VANE GAS COMPRESSORS

City of San Diego, CWP Guidelines

PART 1 -- GENERAL

1.1 WORK OF THIS SECTION

A. The WORK of this Section includes providing the packaged sliding vane compressors, suitable for digester gas service, including all controls and appurtenances necessary to make the package operable, safe, and conform to all applicable codes and standards.

1.2 RELATED SECTIONS

A. The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.

1. Section 11370 Blowers, Compressors and Vacuum Pumps, General

1.3 SHOP DRAWINGS AND SAMPLES

A. The following shall be submitted in compliance of Section 01300:

1. Information on at least one successfully performing installation of comparable size and complexity constructed in the recent past including contact name, address, and telephone number.

1.4 OWNER'S MANUAL

A. In addition to the requirements of Section 11370, the following shall be submitted in the OWNER'S MANUAL in compliance with Section 01300:

1. Results of package compressor tests (using air) in the factory.

1.5 QUALIFICATIONS

$# _____

NTS: In the paragraph below, define the terms "comparable size and complexity" for the equipment or system specified. Requiring experience of more than one successful project requires sound justification and prior written approval from the City Project Manager.

_____ #$

A. **Manufacturer**: Company specializing in digester gas compressors with minimum one successfully performing installation of comparable size and complexity constructed in the recent past. Equipment of comparable size and complexity shall have the following characteristics: [ ].

PART 2 -- PRODUCTS

2.1 GENERAL

A. **Environment**: The equipment indicated in this Section shall be suitable for continuous operation in a Class 1, Division 2 environment.

Gas Compressors: Compressors shall be heavy duty, horizontal, sliding vane type, water cooled, electric motor drive, and suitable for continuous operation 24 hours per day outdoors.

0.1	Operating Conditions:
Service	Saturated digester gas
Elevations above sea level	[ ]
Capacity at 14.7 psia and 68E F, suction (scfm)	[ ]
Inlet temperature, max., (EF)	100
Inlet temperature, min., (EF)	60
Discharge pressure (psig)	[ ]
Compressor speed, max., (rpm)	[ ]
Motor speed, max., (rpm)	[ ]
Motor size, min., (hp)	[ ]
Suction flange size, min., (in)	[ ]
Discharge flange connection, min. (in)	[ ]

The sludge gas shall be approximately of the composition as follows:

Methane (CH_4)	[ ] percent by volume
Carbon Dioxide (CO_2)	[ ] percent by volume
Nitrogen (N_2)	[ ] percent by volume
Hydrogen Sulfide (H_2S)	[ ] ppm
Moisture Content	Saturated
Specific Gravity	0.8
Density (lb/cu ft)	0.06
0.2	Materials and Construction:

Casing and heads	-	Cast iron, ASTM A-278, class 40, with 40,000 psi tensile strength, annealed and stress-relieved, water-cooled
Rotor and shaft	-	Solid steel forging with integral shaft, AISI C 1045, 90,000 psi ultimate tensile strength, 170-210 Brinell hardness
Support	-	Common structural steel base
Sliding Vanes	-	High temperature laminate of phenolic resin and aramid fibre, heat treated and stabilized, designed to withstand a combined stress of 6,000 psi
Bearings	-	Fixed and floating roller bearings with an L-10 life of minimum 100,000 hours
Drive	-	[Direct drive with pin-type coupling] [Belt drive with adjustable sliding motor base] and safety guard
Seals	-	Heavy duty mechanical shaft seal, single spring design, with large face area, and additional oil-buffered bearing seal for corrosive gas service

0.3 Motor: Heavy-duty, explosion -proof, electric motor, for [480] volt, 3-phase, 60 Hz supply, suitable for outdoor installation, in accordance with Section 16040.

0.1 **Accessories**: Each compressor package or group of compressors shall be provided with the following accessories:

1.1 Lubrication system consisting of skid-mounted [15] gallon oil storage tank with gage and connections; direct-driven pumping unit; 20-micron oil filter; lubricant flow sensor; distribution block with cycle counter; fault indicator with memory; and all necessary interconnecting piping and wiring.

1.2 Cooling water connection with shut-off valve, strainer, solenoid valve, flow meter, thermometer, drain connection, and self-contained loop system.

1.3 Control panel in explosion-proof enclosure, consisting of the following:

disconnect switches
starters
[alternator or sequencing control unit]
failure alarm with contact for remote indication
low oil level/pressure alarms
bearing temperature alarms
indicating lights
pushbutton controls
nametags
panel light

all necessary input and output connections

1.4 Intake regulator to control compressor capacity or maintain pressure in receiver.

1.5 Compressor isolating and check valves.

1.6 Braided, stainless steel, flexible, flanged connectors on compressor suction and discharge.

1.7 Safety relief valve, piped to suction side.

1.8 Safety guard to OSHA standards.

1.9 Type 316 stainless steel anchor bolts, washers, and nuts.

1.10 All necessary pressure, level, flow, and temperature switches and controls, to provide a complete, functional system.

1.1 TOOLS AND SPARE PARTS

1.1 Special tools shall be provided in accordance with Section 11000.

1.2 The following spare parts shall be provided for each compressor unit:

2.1 Gasket kit
2.2 One set of compressor and motor bearings
2.3 One set of vanes
2.4 One set of seals
2.5 One set of indicating lights
[2.6 One set of V-belts]

1.2 MANUFACTURERS

2.1 Products shall be manufactured by the following (or equal):

1.1 Fuller Company

PART 1.2 -- EXECUTION

2.1 INSTALLATION

1.1 **Mounting**: Gas compressors shall be mounted on structural steel bases and anchored to concrete foundations as indicated.

** END OF SECTION **